On the Form of the Tails of Comets. By M. de Fonvielle.

M. W. de Fonvielle has communicated a note "On the possibility of determining by a geometrical construction the form which the tails of Comets assume as seen from the Earth." The basis is Cardan's theory that the tail is produced by solar light refracted through the nucleus of the Comet, and subsequently reflected by solid and discontinuous particles of matter floating in almost every direction in infinite space. This theory was rejected by Kepler, on the ground that it was impossible to account by means of it for the curvature of the tail; M. de Fonvielle contends that, taking account of the finite velocity of light, the theory does in general give a curvature to the tail: viz. the tail as seen at any instant is, in fact, made up of elements of the tails due to a series of preceding positions of the Comet, being thus a plane curve (situate in the plane of the Comet's orbit), and which will accordingly be seen as a curved line; [viz. this will be the case if only the Earth is not in the plane of the Comet's orbit (that is, unless the orbit coincide with the Ecliptic, or the Earth be at the time of observation in the line of nodes)]. The construction for the figure of the tail in space is in effect as follows: the curve is the locus of a point, in the prolongation of the Comet's radius vector at a time preceding the observation, such that the distance of the point from the Comet (that is, the prolongation in question) *plus* the distance of the point from the Earth, is proportional to the interval up to the time of observation: and the curve can be in this manner constructed geometrically without much difficulty.

Elements of the Binary Stars, ζ Aquarii, 36 Andromedæ, and ι Leonis. By Dr. W. Doberck.

The elements are as follow:—

ζ Aquarii.

T	1924·15
Node	140° 51′
λ	134° 40
γ	44° 42
Period	1578^{yrs}·33
a	7′·64
e	0·6518

36 *Andromedæ*.

T	1798·80
Node	57° 54′
λ	142° 19′
γ	41° 39′
Period	349^{yrs}·1
a	1″·54
e	0·6537.

ι *Leonis*.

Angle of Position = 93°·75 − 0·544 $(t-1830)$
Distance = 2″·20 + 0″·01 $(t-1830)$.

The Observations, and comparisons therewith of the Positions as calculated from the deduced elements, as well of the foregoing stars as of μ^2 *Boötis*, σ *Coronæ*, τ *Ophiuchi*, and γ *Leonis* (*Algieba*) (*see* pp. 373 and 397), are given in two papers published in the current volume (xiv.) of the *Transactions of the Royal Irish Academy*.

Discovery and Elements of Minor Planets (147) *and* (148).

Minor Planet (147), which has been named *Protogeneia*, was first seen by Dr. Schulhof, at Vienna, in the night of July 10–11, as a faint object of the 12th magnitude, which he estimated, at 13^h, to be distant about +3^s in R.A. and +3′ in Declination from a small star, No. 20510–1 of Oeltzen's Argelander's *Catalogue of Southern Stars*. On the following morning Dr. Schulhof was enabled to establish the suspected object as a new planet. Observations were obtained on the three following nights.

1875.	Mean Time at Vienna. h m s	Apparent R.A. h m s	L. f. p.	Apparent Dec. ° ′ ″	L. f. p.
July 11	12 59 23	20 19 22·78	6·636*n*	−17 29 53·6	9·959
12	13 55 55	20 18 36·06	8·076	−17 31 52·8	9·957
13	12 49 0	20 17 53·07	6·801*n*	−17 33 47·0	9·959

The following elements have been calculated by Dr. Schulhof from the observations made at Vienna on July 11, Pola and Vienna on July 26, and at Berlin, Leipzig, and Vienna on August 8 (*Ast. Nach.*, No. 2,052).